



Astronomy Club of Tulsa

# OBSERVER

October 2004

<http://www.AstroTulsa.com>

ACT, Inc. has been meeting continuously since 1937 and was incorporated in 1986. It is a nonprofit; tax deductible organization dedicated to promoting, to the public, the art of viewing and the scientific aspect of astronomy.

## **What**

The Astronomy Club of Tulsa Meeting

## **When**

8 October 2004 at 7:30 P.M.

## **Where**

Room M1 inside Keplinger Hall, the Science & Engineering Building at TU. Enter the parking lot on the East Side of Keplinger Hall from Harvard and 5th Street. This will take you directly toward the staircase to enter the building. Room M1 is the first room on the left.

---

## **President's Message**

**Craig Davis**

October is going to be a busy month for all of us. We'll not only have the pleasure of the Tulsa Fair, with pigs galore, but even more so a lunar eclipse towards the end of the month as a precursor to Halloween. Ah yes, lunar eclipses that display the grizzly blood red moon - or as so many see it. Could it be that this lunar eclipse depicts a forewarning to all that witches and goblins and werewolves and monsters are gathering forces since Hallows Eve is nigh? Naw, kinda doubt it. But still, it will remain a well-timed added feature to this time of year. It should be a very good highlight for all the kids!

A public viewing session for this eclipse has been planned and will be quite a highlight for the general public to see a lunar eclipse as well as our club members providing them with an easy and open amount of information concerning not only the eclipse. The public viewing session of the eclipse will be held the evening of October 27th at HUNTERS PARK on 91st St. between Sheridan and Yale. We are working in conjunction with Oxley Nature Center's Donna Horton who has been a tremendous help. HUNTERS PARK has a very nice area for us to set up

on which will be very easy for all to find along with the parking lot close by. The more of you that would like to participate the better. Since the main feature of this public viewing session will be the lunar eclipse this leads us to our guest speaker for the next club meeting.

Our guest speaker will be Chris Brown. Chris teaches astronomy at TCC and holds an outstanding background in this field. Being a club member, it's good to see him and his class out at the observatory. Chris will speak to us on a very interesting area that hasn't been covered in a very long time - the moon. It's truly amazing as to just how important it is that we have a moon and to what extent it plays a major role in our day-to-day lives. I'm quite sure that all of us will truly enjoy this subject as well as add to our personal knowledge of a small but important piece of our solar system. By the way, how many members may be considered a specific lunar observer?

I'm very glad as to the response of my question to all members at the last meeting - "would you like to hold an annual club star party at the ranch". The ranch, managed by James Caldron and his family borders the north side of Tall Grass Prairie Preserve. If it did not have wonderful dark skies it wouldn't be claimed that it is as close as we can get to Okie/Tex without an eight-hour drive. With everyone openly agreeing to this proposal we will work on getting an annual star party scheduled in for this summer. Obviously it would be best to hold it during the summer months so it would be better for club members to bring along the kids as well as the weather factored in too. I'll let everyone know when it will occur as soon as it gets set up. Thanks to all for responding in such a positive way as you did. It will most definitely be well worth it! The same sentiment goes to all that are heading out to the Okie/Tex star party this year. It's without a doubt one of the best dark sky areas in the country! If you can go, by all means please do, you'll really like it!

Here's a good website reference for all. It may be good for you to take a look at, "Beating the Seeing" [www.telescopesa.za.org/TGHHowTo2.thm#](http://www.telescopesa.za.org/TGHHowTo2.thm#). This is a very helpful website that covers a number of different areas such as this. It never hurts to look at things such as this for it may show you a way to make things easier while you're observing or clear up something that has been confusing for quite some time.

For your information, the following is the specifics for the lunar

TULSA, OKLAHOMA  
W095 56, N36 08

Central Daylight Time

			h	m	Moon's	
					Azimuth	Altitude
					°	°
Moonrise	2004 Oct 27	18:23			74.4	----
Moon enters penumbra	2004 Oct 27	19:05.5			80.2	7.4
Moon enters umbra	2004 Oct 27	20:14.3			89.5	21.0
Moon enters totality	2004 Oct 27	21:23.4			99.8	34.7
Middle of eclipse	2004 Oct 27	22:04.0			106.9	42.6
Moon leaves totality	2004 Oct 27	22:44.6			115.7	50.2
Moon leaves umbra	2004 Oct 27	23:53.7			137.5	61.4
Moon leaves penumbra	2004 Oct 28	01:02.7			173.7	67.5
Moonset	2004 Oct 28	08:12			289.4	----

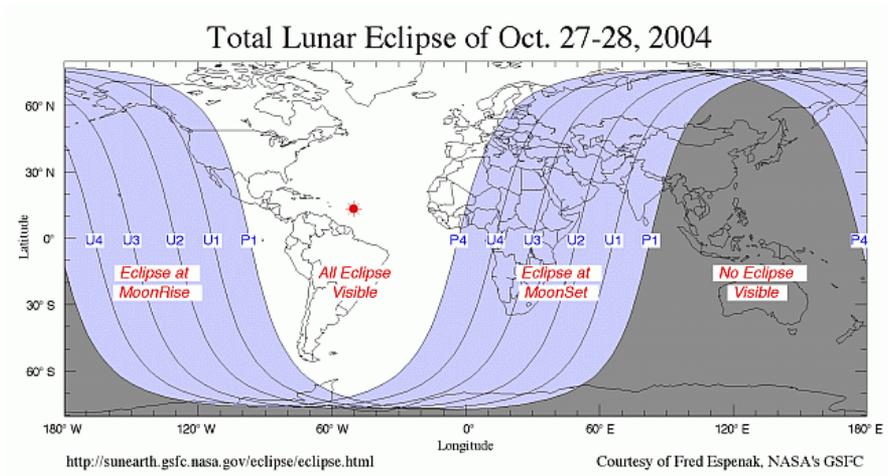
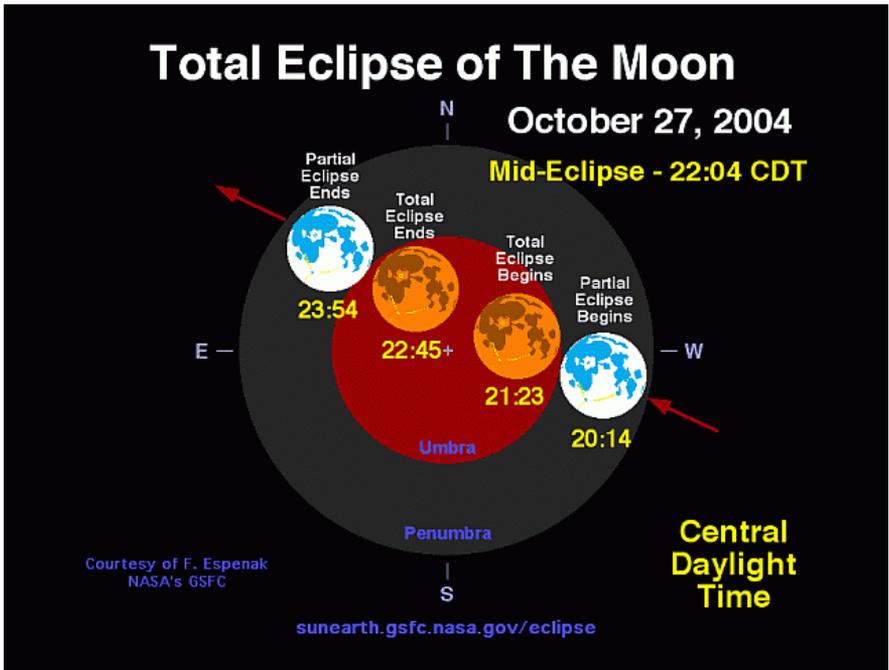
This information was easily acquired via the U.S. Naval Observatory website and all times are listed in the military 24 hour clock. It is very confusing to many but it honestly isn't that hard at all. For instance, moonrise at 18:23 is the same as 6:23 P.M. The military times/clock is very easy. Simply add whatever time it may happen to be to 12 from 12 noon on. 2 P.M. would be adding 2 to 12 or its 14:00 hours. 8 P.M. would be adding 8 to 12 or 20:00. From midnight to noon it runs as we commonly use it, 1-12. It's only from noon on that it seems odd. As I said, it's very simple. No, we don't use this form of time designation daily but it is good to know it in matters such as this or others.

With the Tulsa Fair and the lunar eclipse coming up on us soon it'll be a good month to enjoy the rides and turkey legs at the fair while getting ready to see a bloody red lunar eclipse just before Halloween. This is what you call a very good Trick or Treat, right?

Looking forward to seeing everyone at the next club meeting, October 8th, and also at the lunar eclipse public viewing at Hunters Park on the 27th.

Clear skies to all,

Craig D. Davis  
President  
Astronomy Club of Tulsa



## Considering the depth of the Universe

By Gary Thomas  
Network Administrator, Tulsa  
gary@technoprophecy.com

There where the dark sky flourishes is Ft. Davis, Texas, not too far south where I-10 and I-20 intersect. Consecrated to science on top of Mt. Locke, just 16 miles from the friendly West Texas town are three pure white cathedral-like domes. The University of Texas for its isolation from city light pollution and low annual precipitation chose this unlikely remote point.

Then again, clouds and showers did prevent us from seeing night sky during our two-day visit to McDonald Observatory. We nevertheless did not feel the loss too much. Extensive exhibits, fascinating talks, and guided tours of three massive professional telescopes, including the world's largest 433-inch reflector Hobby-Eberly Telescope (HET), all kept us more than active. Besides, we would have another chance for a rainless-cloudless night on our second observatory sojourn some two States distance from McDonald.

As far back as memory takes me I recall only awe when fixing my eyes toward the twinkling bowl of outer space. A while ago, we code-named our instrument of choice "bonocs". The adult world knew them as binoculars. When not spying imaginary hostiles, we pointed these specs to the stars to reveal hundreds more specks of ethereal light.

Astronomy's most accurate estimate to date discloses more stars in the universe than all the particles of quartz on the dunes and shores of earth combined. In fact, the score is currently ten times more stars to sand with a mind boggling number of  $7 \times 10^{22}$  stars. (That is a seven with 22 zeroes following it).

Though a thoroughly incomprehensible number, the psalmist of old discovered the Most High has counted and named every star. That more than suggests a massive but finite number of stars as opposed to an infinite number. Otherwise, God's counting and naming would continue without end. How did pre-scientific Israelite writers know the universe was finite? Our brightest minds from Newton until Einstein held to the infinite universe theory. Recent theories predict because of the gravity

of mass inside the universe that space is curved around itself into a finite sphere.

McDonald Observatory is a world-class astronomical research facility open to the public on a daily basis. (See hours of operation on their website [www.mcdonaldobservatory.org](http://www.mcdonaldobservatory.org)). "The Visitors Center is the check-in point for all daytime and evening visitor activities." Inside are intriguing exhibits, a comfortable theater, astronomy gift shop, and Star Date Café where you can eat excellent quesadillas. Adjacent to the Center is Telescope Park where visitors view night objects through a couple of modest amateur telescopes under domes, weather permitting.

Though weather did not permit us much telescopic viewing, the clouds did briefly cooperate for us to see Jupiter, its Galilean moons, a double star in Leo and our sun. One of two terms we labeled "our new words" for the trip was the term "spectroscopy". The second word "docent" means "a person who leads guided tours especially through a museum or art gallery." We heard them used repeatedly during a 10-day drive through the southwest.

As your docent for the paper-ink tour before you, I would be remiss if I did not mention that being a student of the Creator's vastly ordered symmetry of stars is an enjoyable and meaningful activity. Light and beauty stream through space awaiting observation from a backyard, a country road or an observatory. The stars provide an excellent chance for sentient beings to ask the big questions. Where do I come from? Who am I? Where am I going?

The darkness of the ancient Israel sky must have been spectacular. One of the Israelite shepherds penned a potent psalm: "The heavens are telling of the glory of God; and their expanse is declaring the work of His hands." Their language "reveals knowledge". Like music, starlight speaks a universal language "to the end of the world".

The fundamental building block of Western music is a seven-note diatonic scale: do-re-mi-fa-sol-la-ti-do. A spectrum (think of a rainbow) is the division of white light into seven colors: red-orange-yellow-green-blue-indigo-violet. The Hertzsprung-Russell (H-R) diagram classifies stars into seven groups according to their color and temperature with the letters: OBAFGKM (O being blue hot and M, cool red). How did the biblical poets know that starlight "reveals knowledge"?

As DNA is a unique fingerprint for all life, so too stars have a unique spectral fingerprint. No two stars have the same spectrum. Stars possess different temperatures and compose different amounts and kinds of elements (mostly hydrogen and helium). "Spectroscopy" is the study of the decoding of light from distant stellar bodies.

Almost everything astronomers do involve spectroscopy in one form or another. Most hot objects like stars emit a continuous spectrum that will vary according to their temperature. Individual elements also produce a unique kind of spectrum known as emission and absorption spectrums. So not only does starlight tell temperature, it also reveals the star's composition.

Movement of galaxies is another quantity a spectrum conveys. A spectrum shifted to the red is said to be moving away from us (thus the famous Edwin Hubble "red shift"). Shifted to the blue side of the spectrum, the galaxy is said to be moving toward us.

Recall the psalmist who made known to us that God named all the stars. Each possesses a one-of-a-kind spectral signature, similar to life (plant, animal or human) that possesses a unique DNA signature. The Most High apparently does not think of stars as nameless spheres of matter in time and space without purpose. He provides breathtaking variety within the super clusters of galaxies of stars for us to think upon and wonder.

Even we have named a portion of the stars. Betelgeuse is a name given for the supergiant red star in the shoulder of the constellation Orion. (It is cool red, signified by an M on the H-R diagram). Every star in the vastness of space displays distinctiveness and is worthy of our contemplation and study. Such knowledge enriches our view of God and the place we have in the cosmos - an intellectual contribution well worth a trip to McDonald Observatory.

## James A. Westphal

*(A former Astronomy Club of Tulsa member)*

Saturday, September 11, 2004  
Los Angeles Times

By Thomas H. Maugh II, Times Staff Writer



James A. Westphal, the professed tinkerer whose innovative designs for geological instruments and astronomical cameras led him to a full professorship at Caltech despite his lack of a graduate degree, died Friday at the age of 74 after a long illness.

The son of "a shade-tree mechanic of the first order," Westphal displayed an uncanny ability to assemble state-of-the-art devices out of unexpected raw materials, parlaying his creativity into a career helping other scientists overcome seemingly insoluble technical hurdles.

His knack for innovation earned him a crucial role in designing the main camera for the Hubble Space Telescope, brought him a MacArthur grant, and led to a career-capping stint as director of Caltech's Palomar Observatory.

And in between those feats, he developed a small camera that was inserted into Old Faithful to determine how the geyser worked, constructed high-pressure aquariums to house fish and other organisms collected at great depths in the ocean, designed instruments to measure the properties of glaciers and, at the height of the 1973 energy crisis, devised a way to substantially lower energy use of fluorescent lights in office buildings.

"He was an extraordinarily gifted person," said Bruce Murray, former director of the Jet Propulsion Laboratory, who worked with Westphal on astronomical cameras. "He had an incredible ability to grasp the essential measurement and the essential way to make it in a very simplified way. He had a real insight into how nature worked."

Westphal's tinkering began when he was a high school student in Tulsa, Okla., where he spent his spare time building telescope mirrors. An uncle helped him get a job with a Tulsa-based oil exploration contractor so he could earn money to enroll at the University of Tulsa.

Working nights, weekends and summers, he learned how to build and maintain seismographs, gamma-ray detectors and neutron instruments for oil wells. After graduating with a bachelor's degree in physics, he joined the company full-time, exploring for crude oil on Mexico's Gulf Coast and isthmus, where he camped in the jungle for six months.

He was on the team that made a major oil find under the now-famous archeological site of La Venta.

"I always felt a sadness at having been a partner to finding oil under one of the oldest archeological sites in the Western Hemisphere," Westphal said later.

In 1960, he began collaborating with Caltech geophysicist C. Hewitt Dix on what "he and I thought of as a nifty way to process seismic data before the days of computers that could fit on a desk," Westphal said. Dix invited him to Caltech and Westphal spent the rest of his career there.

Typical of his work was the invention of \$300 tiltmeters that he devised in 1980 to measure ground motion at Mt. St. Helens that might be the precursor of an eruption.

Commercial tiltmeters cost \$6,000 apiece and scientists had to rush in and rescue them before an eruption.

Westphal's instruments, insulated with plastic foam pellets and encased in half of a plastic garbage can, were so cheap they could be left in place.

Asked how he came up with such devices, Westphal showed his characteristic modesty: "It's magic. All of a sudden, the idea just pops up. Who knows how?"

While working with Dix, Westphal chatted with other Caltech researchers about interesting projects.

One intriguing question at the beginning of the Space Age was whether astronauts who went to the moon would sink into what was believed to be a deep layer of dust coating the surface.

He and Murray decided they could answer the question using a telescope fitted with an infrared detector to analyze emitted radiation. Loosely aggregated dust, they concluded, would emit much less radiation than solid rock. Ultimately, they demonstrated that the astronauts would be safe.

In 1973, Westphal built a highly sensitive silicon-intensified target camera for the 200-inch Hale Telescope at Palomar that was 20 times more sensitive to light than the photographic film then being used.

When he and astronomer Jerry Kristian first hooked it up and pointed the Hale at the Milky Way, the pattern of stars was so unusual that Kristian thought the telescope was pointed in the wrong direction. In actuality, they were seeing thousands of stars that were too faint to have been observed before. That camera is now in the National Air and Space Museum.

Westphal was also intrigued by a newly developed light detector, called the charge-coupled device, being developed by NASA for the Galileo spacecraft's mission to Jupiter.

He and Caltech astronomer Jim Gunn recommended that such devices be used on the Hubble's Wide-Field and Planetary Camera. Westphal became the principal investigator for the development of the camera. That proved to be a 17-year project that earned Westphal "1.6 million frequent flier miles on American Airlines" for attending innumerable meetings.

Ultimately, the scientists were also able to get the devices installed on the Hale Telescope, giving it the sensitivity of a 2,000-inch mirror using photographic plates.

Westphal is survived by his wife, Jean; a son, Andrew of Richmond, Calif.; two stepdaughters, Robin Stroll of Agoura Hills and Susan Stroll of Eagle Rock; and two granddaughters.

## Night Sky Network

By Neta Apple

Congratulations to us all! Largely due to the outreach efforts of its members in the past the Astronomy Club of Tulsa has been accepted into the Night Sky Network. We are the only club in Oklahoma currently on the list. Our first set of materials is due to arrive by October 15 so they will be ready for us to meet and learn to use them when we return from the Okie-Tex star party. Depending on what we get we may need to meet before October 27, the date of the lunar eclipse. If we use any of the new materials at that event we can get credit for it as one of our five required for the year. The first set of materials is about extrasolar planets so should be very interesting.

I would also like to acknowledge and thank Gerry Andries, Richard Apple, Steve Chapman, Tim Davis, and Zach Garrett for a job well done on September 21. We were invited to so a sun/star party for the Edison Middle School of Tulsa during their retreat at Dry Gulch USA. Gerry, Rick, Tim, and I brought telescopes equipped for viewing the sun so we had a total of three white light and two hydrogen alpha telescopes for the sun party portion of the event. We were fed a good dinner before setting up for the evening observing where we were joined by Steve and Zach. The students were really fun to work with, and the parents and teachers present were very interested as well. The school staff was impressed with our club and has already told us they want us to come back for the event next year.

---

## Desk Calendars Announcement

It is that time of year again when I order the "Year in Space" 2005 Desk Calendar for the Astronomy Club of Tulsa membership at \$9.00 each (a 40% discount from the \$14.95 book store price). Do not confuse these with the wall calendars that John Land is also taking orders for at \$7.00 each. The wall calendars are the standard type with one very nice picture per month for a total of 12 for the year. For \$2.00 more, we get a unique spiral bound desk calendar with 52 spectacular space and astronomy pictures, and plenty of room to write a week of notes on each facing page. Moon phase and important historical events are printed on each day. Three types of long term planning calendars are found in the back, to meet the planning style of most people. You may see a pre-

view on the [www.yearinspace.com](http://www.yearinspace.com) web site.

You do not need to pay for these in advance. You may order by simply replying to this message, and tell me how many to order for you. We will trust you to pay when you pick them up. Do not order unless you plan to attend at least one of our meetings by early next year, because you must pick up your order in person. They are sent to my house in a single package. If you want yours delivered by mail, and you do not mind paying \$10.95, you can order on your own through the web site and tell them you are a club member.

The deadline is Oct 10th to place your order either by email or in person at the regular meeting, so I can get them on order for delivery by the Annual Dinner Meeting in November.

Gerry Andries  
Observatory Group Director

---

## Astroland Tidbits

By John Land

Its that time of year for many of you to renew your memberships and magazine subscriptions. To spend up your renewals use the online forms at <http://www.astrotulsa.com/Club/join.asp> Please send any inquiries about your membership or other club matters to [membership@astrotulsa.com](mailto:membership@astrotulsa.com)

**2005 Astronomy Calendars ARE IN!** - 2005 Deep Space Mysteries Wall Calendars from Astronomy magazine are here. As club members you can get yours for \$ 8.00 each a 33% discount over the cover price. They will be available to those attending the club meeting on a first come first served basis. If you cannot attend the meeting contact John Land to reserve a calendar. We will be selling these at our Public Lunar Eclipse night at a higher price for a club fundraiser.

**2005 Royal Canadian Observers Handbooks** - will be available this year at \$16.50 each. I have preordered 15 copies and will sell them until they run out. Hopefully they will arrive by the Oct 8 meeting. The Canadian Observer's handbook has been the recognized source of astronomical events and tables since 1911. You find easy to read monthly charts detailing events for 2005 plus many pages for observing planets,

comets and asteroids. For details see [www.rasc.ca](http://www.rasc.ca)

**Welcome to our new members:** Randy Northcutt, Dave Grimmer

### **ON LINE Club Memberships and Renewals:**

Club memberships are \$25 per year for adults and \$15 per year for students. We now have an automated on line registration form on the website for new AND renewal memberships plus magazine subscriptions. You simply type in your information and hit send to submit the information.

<http://www.astrotulsa.com/Club/join.asp>

You can then print a copy of the form and mail in your check.

Astronomy Club of Tulsa  
25209 E 62nd St  
Broken Arrow, OK 74014

**Magazine Subscriptions:** If your magazines are coming up for renewal, try to save the mailing label or renewal form you get in the mail. Do NOT mail renewals back to the magazine! To get the club discount you must go through the club group rate. Astronomy is \$29 for 1 year or \$55 for 2 years. [www.astronomy.com](http://www.astronomy.com), Sky & Telescope is \$33 / yr [www.skyandtelescope.com](http://www.skyandtelescope.com). Sky and Telescope also offers a 10% discount on their products. NIGHT SKY is \$18 / yr A exciting new bi-monthly magazine for beginning or casual astronomers. <http://nightskymag.com/> The club has coupons for a free issue

### **Address Corrections - Email changes - Questions:**

You may forward questions to the club call our message line at 918-688-MARS ( 6277 ) by email [membership@astrotulsa.com](mailto:membership@astrotulsa.com) Please leave a clear message with your name, phone number, your question - along with address or email Please make email subject lines that address your question. The spam filters may DELETE emails without clear identification!

## Schedule of Events

Tentatively scheduled dates below are bracketed with question marks.  
The number of persons expected is in parenthesis.

### EVENTS AT RMCC OBSERVATORY:

#### OCT

- 15 Fri 06:15 Club Star Party
- 16 Sat 06:15 Back Up for 10/15
- 21 Thu 06:00 Kellyville CS and BS Troop 237 (30)
- 22 Fri 05:30 St Luke Youth Group (15)

#### NOV

- 12 Fri 07:00 Club Star Party
- 13 Sat 07:00 Back Up for 11/12

#### DEC

- 03 Fri 05:00 Club Star Party
- 04 Sat 05:00 Back Up for 12/03

### EVENTS AWAY FROM OBSERVATORY

#### OCT

- 08 Fri 07:30 Regular Club Meeting at TU
- 09 Sat 04:00 Gilcrease Museum Campout at Gilcrease (Check with Craig Davis)
- 10 Sun thru 17th Okie Tex Star Party at Black Mesa, OK
- 27 Wed 08:00 Oxley/ACT Lunar Eclipse Watch at Tulsa Hunter Park, So. of 91st St & Joplin Ave (1500)
- 29 Fri 07:00 Tulsa Air and Space Museum at Tulsa International Airport (100) (Check with Neta Apple)

#### NOV

- 05 Fri ??:?? Annual Dinner Meeting at ??

#### DEC

- 10 Fri 07:30 Regular Club Meeting at TU

Gerry Andries  
Observatory Group Director



Astronomy Club of Tulsa membership (\$25/year) includes membership in the Astronomical League and subscription to ACT's "Observer" and AL's "Reflector". "Astronomy" (\$29/year) and "Sky and Telescope" (\$33/year) are also available through the club. For more information contact John Land at 918.357.1759. Permission is hereby granted to reprint from this publication provided credit is given to the original author and the Astronomy Club of Tulsa Observer is identified as the source.

## OFFICERS

### President:

Craig Davis  
918.252.1781

### Vice-President:

### Treasure:

John Land  
918.357.1759

### Secretary:

Jim Miller  
918.627.4551

## BOARD MEMBERS AT LARGE

Teresa Kincannon  
Rod Gallagher  
David Stine  
Tom McDonough  
Rocky Keys  
Steve Chapman

## APPOINTED STAFF

### RMCC Observatory Director:

Gerry Andries—369-3320

### RMCC Facility Manager:

Craig Davis—252-1781

### Membership Chairman:

John Land—357-1759

### Observing Chairman:

David Stine—834-1310

### New Members:

Denny Mishler—274-4772

### Newsletter Editor:

Richie Shroff—835-3565

### Webmaster:

Tom McDonough—665-1853

## Astronomy Club of Tulsa

918.688.MARS (6277)

[www.AstroTulsa.com](http://www.AstroTulsa.com)

ASTRONOMY CLUB OF TULSA  
P.O. BOX 470611  
TULSA OK 74147-0611  
ADDRESS CORRECTION REQUESTED